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ABSTRACT

This study sought to determine the effect of four different structured group decision-making techniques in an undergraduate business communication course on the quality of a written assignment and on student reaction to the decision-making technique. The effects of gender, age, and academic intellectual ability were also investigated. The four group techniques investigated were reverse brainstorming, dialectical inquiry, devil's advocacy, and consensus. The sample consisted of 120 (64 males, 56 females) undergraduate students enrolled in four sections of a junior-senior level business communication course. Each experimental and control group consisted of four randomly assigned students. Six groups were used in each experimental decision-making technique and six groups were used as control groups. An analytical memorandum report written by the students and rated by business communication experts and a self-reporting questionnaire were used to determine the treatment effect. The control and consensus technique groups used significantly lower levels of debate and criticism. The control groups produced written documents that were of a significantly higher quality than the groups using the decision-making techniques. Consensus, devil's advocacy, and reverse brainstorming groups produced the next highest scores. Dialectical inquiry groups produced the lowest scores. In addition, gender, age, and academic intellectual ability did not correlate significantly with the quality of written document and student reaction. These results imply that business communication educators do not need to assign students to groups by gender, age, or academic intellectual ability. In fact, when using these structured group techniques in the business communication classroom, random assignment of groups is recommended. (Contains 33 references.) (JB)

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THE EFFECT OF STRUCTURED TECHNIQUES ON GROUP DECISION MAKING IN THE UNDERGRADUATE BUSINESS COMMUNICATION CLASSROOM

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THE EFFECT OF STRUCTURED TECHNIQUES ON GROUP DECISION MAKING IN THE UNDERGRADUATE BUSINESS COMMUNICATION CLASSROOM

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Abstract

The purpose of this study was to determine the effect of four structured group decision-making techniques on the quality of written document and student reaction in undergraduate business communication courses. The effects of gender, age, and academic intellectual ability were also investigated. The control and consensus technique groups used significantly lower levels of debate and criticism. The control groups produced written documents that were of a significantly higher quality than the groups using the decision-making techniques. In addition, the effects of student reaction, gender, age, and academic intellectual ability were not significant.

Introduction

The popularity of collaborative writing groups continues to increase both in business and in the classroom. There is a growing need for employees who can work effectively and make decisions in groups. Thus, business communication educators must create classroom situations where students learn to work together effectively on assigned tasks. Increasing group decision-making effectiveness requires more than just throwing students together with their classmates with little or no guidance or preparation. Bruffee (1984) stated, "to do that is merely to perpetuate, perhaps even aggravate, the many possible negative efforts of peer group influence: conformity, anti-intellectualism, intimidation, and leveling-down of quality" (p. 652).

To avoid these problems and to develop appropriate group skills, educators must include structured group techniques as part of the educational program. Which techniques have the most applicability in the business communication classroom? Which techniques will produce the highest quality document as well as the most favorable student reaction? The application of structured group decision-making techniques in the business communication classroom requires research to test their usefulness for improving collaborative writing.

The purpose of this study was to determine which, if any, of four structured group techniques--reverse brainstorming (RB), dialectical inquiry (DI), devil's advocacy (DA), or consensus (C)--can best improve the functioning of decision-making groups in the undergraduate business communication classroom as assessed by quality of written document and student reaction. Also, the effects of gender, age, and academic intellectual ability on quality of written document and student reaction to the decision-making technique were investigated.

Review of Related Literature

Group and Individual Learning

Advantages of small groups include interaction and the pooling of differing abilities which can motivate group members to solve problems they could not have solved as effectively alone. Many research studies have reported the positive impact of group learning on student achievement, social relationships, motivation to learn, and attitude (Slavin, 1985; Sharan & Shaulov, 1990; Lazarowitz & Karsenty, 1990).

After an extensive review of group research, Shaw (1981) concluded that group decisions are generally more accurate and groups usually produce more and better solutions to problems. In addition, the related literature shows that groups tend to learn faster than individuals and group activities facilitate learning.

Group Decision-Making Techniques

Group learning may be the solution to the practical problems of large classes. More importantly, the review of related literature provides a theoretical framework that, in general, shows that group work in the classroom tends to result in improved student achievement and performance, social relationships, motivation to learn, and attitudes. Researchers reported that educators may want to structure conflict into the learning group to increase students' involvement in learning, to guard against groupthink, and to increase motivation. Consensus (C) is often used as a group decision-making technique; however, this technique does not formally structure conflict into the group and is designed to elicit a more open, less critical discussion (Schweiger & Sandberg, 1989). This more open, less critical discussion characteristic can make the consensus technique susceptible to groupthink. As suggested in the literature, dialectal inquiry (DI), devil's advocacy (DA), and reverse

brainstorming (RB) decision-making techniques structure conflict into the group process (Johnson & Johnson, 1991; Rothwell, 1992; Schweiger & Sandberg, 1989).

Devil's Advocacy (DA) structures conflict into the decision-making process. The role of the devil's advocate is to introduce dissent to avoid reaching a premature and potentially erroneous consensus. The devil's advocate challenges assumptions and broadens the range of alternatives which are considered (Schweiger & Sandberg, 1989).

Advantages of the DA technique include the criticism of assumptions and solutions. A disadvantage is the destructive attitude present in the technique. The group member whose idea was criticized and rejected may develop a negative attitude and only produce safe solutions. Another disadvantage of the DA technique is the fact that no new plan is suggested to replace the rejected one (Mason, 1969).

Dialectical Inquiry (DI) is a group-forming technique that will produce the most divergent solutions to a given problem. This technique involves separating decision makers into subgroups. One of the subgroups will identify the assumptions upon which the original recommendation is based and develop an alternative recommendation (Schweiger & Sandberg, 1989).

An advantage of the DI technique is that the plan is confronted and a new plan is developed through structured debate. The effectiveness of the DI technique in strategic planning has been supported by the research (Mason, 1969; Mitroff & Emshoff, 1979). In contrast, the DI technique has been criticized because sources of the plan and counterplan are not clearly identified and thus may result in misintrepretation of this technique (Chanin & Shapiro, 1985).

Reverse Brainstorming (RB) is similar to brainstorming in that the technique is also concerned with generating ideas but not for solving a problem. Instead, the ideas are criticisms of previously generated solutions. Negative rather than positive features of ideas are sought (VanGundy, 1984).

Strengths of the RB technique include the amount of discussion used for each idea and the search for ways to overcome weaknesses in the alternatives. However, this technique may create a negative climate and be time consuming (VanGundy, 1984).

Based on the review of related literature, it is difficult to determine which decision techniques are the best to use. Although the DI technique appears to produce the lowest quality decisions in classroom settings, this technique has proven to be successful in other settings. Therefore, no clear patterns have emerged. Schweiger and Finger (1984), as well as other researchers, have suggested that future research compare DI and DA to other types of group decision-making structures, such as consensus.

Quality of Written Document

Writing in groups in the classroom has a positive impact on many areas of writing such as peer group editing, peer tutoring, peer criticism, and peer evaluation as well as a significant positive effect on the quality of student writing (Clifford, 1981; O'Donnell, 1985, 1987; Bruffee, 1984, 1986; Burnett, 1990; Lunsford & Ede, 1986). Therefore, quality of written document served as a dependent variable in this study.

Students need to participate in the group process by challenging and questioning their own ideas (Burnett, 1990; Bruffee, 1984). Just assigning students to groups does not guarantee that this participation takes place. Burnett (1990) suggested that students need a structure to help them question and

assess the quality of their products. The four decision-making techniques (RB, DI, DA, and C) studied in this research provide structure to the group process and should improve the quality of written document.

Student Reaction

Another important dependent variable in this study as well as in the classroom is student reaction to a group technique. Levine and Moreland (1990) and Shaw (1976, 1981) stated that a major factor in the success of a group is group cohesion. Members of a cohesive group are more likely to participate in group activities, to stay in the group, and to avoid disrupting the group (Levine & Moreland, 1990).

Group cohesion can be influenced by conflict; as conflict increases, group cohesion can decrease resulting in a less successful group experience (Nelson & Smith, 1990; Shaw, 1976, 1981). Nelson and Smith (1990) reported that dissatisfaction with assigned roles in the group may cause conflict. Therefore, the conflict incorporated into the DA and DI techniques and the impact of conflict on a group's success may be causes for concern when these techniques are used in the classroom.

When using the consensus technique, Miller (1989) found that groups feel more confident about their decisions and are more satisfied with their decisions as well as with their groups. However, Rothwell (1992) suggested that using the consensus technique is time consuming and can produce tension within the group which some members can perceive negatively. Similarly, VanGundy (1984) pointed out that the RB technique focused on the negative aspects of group solutions. It appears that the C and RB techniques may receive negative reaction from students as well.

Gender, Age, and Academic Intellectual Ability

In recent years, gender has received attention in the literature as a possible factor influencing group performance (Acker, 1990; Baird, 1976; Bradley, 1980). Shaw (1981) concluded that men and women behave differently in groups and these behavioral differences impact group processes. Men are traditionally expected to be aggressive, assertive, and task-oriented; females are usually supposed to be passive, nurturing, and person-oriented. In many situations, females are more conforming than males. Specifically, gender behavioral differences may have an influence on the quality of written documents and the student reactions produced by the techniques.

Age has been a neglected variable in group studies. Obviously, persons of different ages behave differently. Much research has been done using children as subjects, but the literature review revealed little work done with college-age students (Shaw, 1981). Two studies were found involving college-age students and adults. Both studies pointed out that age can be a significant variable not only in children's groups but in adult groups as well (Bass, Wurster, Doll, & Clair, 1953; Chaubey, 1974).

Although groups are usually better at solving problems than the average individual, groups are seldom better than the best individual (Schweiger & Sandberg, 1989). Therefore, groups generally perform better if they are composed of individuals who achieve higher scores on measures of academic intellectual ability (Olmsted & Hare, 1978). Also, the review of literature indicated that the more intellectually capable the individual, the more active and less conforming in groups he or she will be (Shaw, 1981).

In a study by Williams and Sternberg (1988), an attempt was made to determine if social and intellectual styles of group members could predict the quality of the group performance. The results showed that individuals do not perform as well as groups and that intellectual styles can predict group performance. Thus, academic intellectual ability appears to influence group processes.

Method

The sample for this study consisted of 120 undergraduate students enrolled in four sections of a junior-senior level business communication course. Each experimental and control group consisted of four randomly assigned students. Six groups were used in each experimental decision-making technique--RB, DI, DA, and C--and six groups were used as control groups. Sixty-four males and 56 females participated in the study.

This study used a factorial experimental design with two independent variables and two dependent variables. One independent variable, decision-making technique, contained four treatment groups and the control group. The other independent variable was gender. The two dependent variables were quality of written document and student reaction to the decision-making technique. An analytical memorandum report written by the students and rated by business communication experts and a self-reporting questionnaire, Student Reaction Questionnaire, were used to determine the treatment effect on the dependent variable. Data for two extraneous variables, age and academic intellectual ability, were collected by administering the Wonderlic Personnel Test. Subjects in this study ranged in age from 19 to 40 years and scored between 9 and 33 on the Wonderlic Personnel Test. This factorial design used a two-way multivariate analysis of variance.

To determine the quality of each item on the Student Reaction Questionnaire, an item analysis was conducted on each of the 18 items appearing on the instrument. Next, principle factor analysis was used to test the construct validity of the items on the Student Reaction Questionnaire. Kaiser's Measure of Sampling Adequacy was also used to test the items on the Student Reaction Questionnarie and eigenvalues were calculated. Thus, the Student Reaction Questionnaire was analyzed statistically through item and principle factor analyses to determine its validity and reliablility. Fifteen of the original 18 items were used to interpret the findings of this study.

The extraneous variables of students' age and academic intellectual ability were compared statistically to the two dependent variables, student reaction and quality of written document, to test for a correlation of .20 or higher.

A multivariate analysis of variance was used to determine if (a) a significant difference existed among the structured group decision-making techniques and the quality of written document and student reaction; (b) a significant difference existed between females and males on the quality of written document and student reaction; and (c) an interaction existed between decision-making technique and gender. Finally, an analysis of variance was performed on the differences between Factors 1 and 2 of the Student Reaction Questionnaire and the two independent variables.

Results and Conclusions

Factor 1 of the Student Reaction Questionnaire (manipulation checks) was significant at the .05 level and involves the criticism of the ideas and recommendations developed within the groups. Specifically, Items 11 through 15, 17, and 18 asked students to comment on their level of agreement or disagreement as

to whether or not two drafts of the report were created and then criticized by other group members.

As shown in Table 1, the control groups were significantly different in that students disagreed that their groups used debate and criticism of subgroups' ideas and recommendations. The control groups differed significantly from the DA ($p < .0002$), DI ($p < .0001$), and RB ($p < .0004$) groups. Control groups did not differ significantly from the C groups. Similarly, the C groups differed significantly from the DA ($p < .0002$), DI ($p < .0001$), and RB ($p < .0003$) groups. Also, a significant difference existed between the DI and RB ($p < .0506$) groups. This difference suggests that the DI groups used more debate and criticism than the RB groups. The test for least square means revealed that students in the control and C groups tended to disagree more strongly with Items 11 through 15, 17, and 18 regarding the debate and adversarial tone of their decision-making technique.

Factor 2 of the Student Reaction Questionnaire (student reaction) was not significant. Therefore, student reaction to a technique may not be an issue when using these techniques in the undergraduate business communication classroom.

The test for differences using least square means revealed that control groups performed significantly better at the .05 level on the quality of written document than C ($p < .0061$), DA ($p < .0157$), DI ($p < .0001$), and RB ($p < .0040$) groups. The least square means score for control groups was 7.31 on the ten-point rating scale. The C ($p < .0011$), DA ($p < .0005$), and RB ($p < .0018$) groups did significantly better than DI groups on quality of written document with mean scores of 5.67, 5.84, and 5.83 respectively (Table 2).

In summary, the control groups produced the highest scores on the quality of written document. C, DA, and RB groups produced

Table 1

Probability of Significant Differences Among the Least Square Means for Factor 1 of the Student Reaction Questionnaire

Group	Least Square Mean	Standard Error LS Mean	Probability > [T] HO:LS Mean (i) = LS Mean(j)** i/j	1	2	3	4	5
Control	33.1399	1.9040	1	.	.9427	.0002*	.0001*	.0004*
Consensus	33.3333	1.8973	2		.	.0002*	.0001*	.0003*
Devil's Advocacy	22.6778	1.9595	3			.	.0909	.8105
Dialectical Inquiry	17.9928	1.9242	4				.	.0506*
Reverse Brainstorming	23.3333	1.8973	5					.

*p < .05

**i = rows; j = columns

Table 2

Probability of Significant Differences Among the Least Square Means for Quality of Written Document

Group	Least Square Mean	Standard Error LS Mean	Probability > [T] HO:LS Mean (i) = LS Mean(j)** i/j	1	2	3	4	5
Control	7.3147	.4174	1	.	.0061*	.0157*	.0001*	.0040*
Consensus	5.6667	.4160	2		.	.7668	.0011*	.8876
Devil's Advocacy	5.8444	.4296	3			.	.0005*	.6632
Dialectical Inquiry	3.6857	.4219	4				.	.0018*
Reverse Brainstorming	5.5833	.4160	5					.

*p < .05

**i = rows; j = columns

the next highest scores on the quality of written document. DI groups did not perform as well and produced the lowest scores on the quality of written document.

Implications

The results of the present study imply that the levels of debate and criticism present in the structured decision-making techniques are characteristics that differentiate the RB, DI, and DA groups from the control and C groups. Factor 1 of the Student Reaction Questionnaire was significant which suggests that debate and critical evaluation appear to be present in the RB, DI, and DA techniques and not present in the control or C techniques. These results indicate that business communication educators should evaluate their objectives for using a particular structured group technique. If the task requires the generation and criticism of many alternatives, then RB, DI, or DA may be the appropriate structured group technique to use in the business communication classroom.

The results of the test for significant differences between Factor 2 (Student Reaction) and the structured decision-making technique were not significant. These results imply that student reaction may not be an issue when using these structured techniques in the business communication classroom. For example, educators' concern about the tension generated by the RB, DI, and DA techniques was not supported by the present research. Similarly, concerns about the negative attitudes students may develop relative to the techniques and their groups were not supported by this research. Since the debate and criticism of other group members' ideas are structured into the techniques, students may believe that they have been given permission to be adversarial. Therefore, business communication educators should not be concerned with student reaction to a particular technique.

Also, these structured group techniques should be considered in classrooms with culturally diverse students. The structure provided in these techniques may encourage more participation from all members of a group.

The control groups produced written documents that were of a significantly higher quality than the groups using the RB, DI, DA, and C techniques, possibly because students may be more accustomed to using the traditional instruction involved in the control group. DA, RB, and C groups produced the next highest scores on the quality of written document. These results imply that the DI technique should be avoided as a decision-making technique in the business communication classroom when the quality of written document is an objective.

Business communication educators should consider training students in the RB, DA, and C techniques before using them in the classroom. Training in the DI technique may also improve results; however, the DI technique may be appropriate only when the objective of the group assignment is to generate and evaluate many assumptions and recommendations. This technique may be more applicable to assignments which involve many complex issues.

The other independent variable, gender, did not have an effect on the quality of written document or student reaction. In addition, no significant interaction existed between decision-making technique and gender. Finally, age and academic intellectual ability did not correlate significantly with the dependent variables. These results imply that business communication educators do not need to assign students to groups by gender, age, or academic intellectual ability. In fact, when using these structured group techniques in the business communication classroom, random assignment of groups is recommended. Also, concerns over women's acceptance of the

adversarial tone of the RB, DI, and DA techniques appear to be unfounded.

Recommendations for Further Study

The following research concerns arising from this study merit further investigation:

1. A study to determine if significant differences would exist among the independent and dependent variables in this study if participation in structured decision-making groups were extended. Will students become better at using the different decision-making techniques after using them for one month, eight weeks, or a full semester? Will students become more concerned with the adversarial tone of the DI, DA, and RB techniques after using these techniques for a longer time period? According to Schweiger, Sandberg, and Ragan (1986), DI and DA techniques leave members less committed to group decisions and less willing to work again with their group.

2. A study to determine the effect of learning styles or personality types on the use of decision-making techniques and the quality of written document and student reaction. Certain learning styles and personality types may not adapt well to the adversarial tones of the RB, DI, and DA techniques.

3. A study to determine if significant differences would exist among the various decision-making techniques and the quality of written document and student reaction if students were trained in the use of the techniques. Providing instruction to students before utilizing these techniques may change the results.

4. A study using the same treatment as described in this experiment be conducted with secondary students to determine if these techniques could be used in secondary classrooms. Secondary students may need more structure in their group projects and may find these structured techniques helpful.

5. A study using the design as described in this study with actual decision-making teams from the work force to determine which techniques produce the highest quality written document and what effect these techniques would have on work force reaction. In addition, the extraneous variables of age and academic intellectual ability of those engaged in the work force may have some effect on quality of written document and reaction to the decision-making techniques that was not present in undergraduate classrooms.

6. A study to determine if significant differences would exist among the independent and dependent variables in this study if culturally diverse subjects were used. Would these structured decision-making techniques encourage more participation from culturally diverse group members?

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